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CLOSURE PLAN

for

Buildings 944/982 Treatment, Storage, and Disposal Facility

at the

Bremerton Naval Complex

May 2005

Submitted By:

Code 106
Puget Sound Naval Shipyard and Intermediate Maintenance Facility
Bremerton, Washington

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FIGURES

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ACRONYMS AND ABBREVIATIONS

ARAR	applicable or relevant and appropriate requirement
bgs	below ground surface
BNC	Bremerton naval complex
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cm/sec	centimeters per second
COC	chemical of concern
cPAH	carcinogenic polycyclic aromatic hydrocarbon
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ESH	Environment, Safety and Health
IMF	Intermediate Maintenance Facility
IWPF	Industrial Wastewater Pretreatment Facility
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
msl	mean sea level
MTCA	Model Toxics Control Act
Navy	U.S. Navy
NBK	Naval Base Kitsap
NPL	National Priorities List
NTU	nephelometric turbidity unit
OU	Operable Unit
PCB	polychlorinated biphenyl
PE	Professional Engineer
PPE	personal protective equipment
PSNS	Puget Sound Naval Shipyard
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RI	Remedial Investigation
ROD	Record of Decision

ACRONYMS AND ABBREVIATIONS (continued)

SDWA	Safe Drinking Water Act
SI	site inspection
SVOC	semi-volatile organic compound
SWMU	Solid Waste Management Unit
TPH	total petroleum hydrocarbon
TSDF	Treatment, Storage, and Disposal Facility
TSP	trisodium phosphate
URS	URS Consultants
VOC	volatile organic compound
WAC	Washington Administrative Code

1. Closure Plan Overview

The purpose of this dangerous waste management facility Closure Plan is to document the steps to clean close the Treatment, Storage, and Disposal Facility (TSDF), Buildings 944 and 982, located within the area commonly called the "Bremerton naval complex" (BNC) (Figure 1). The Closure Plan was prepared in accordance with the requirements of 40 Code of Federal Regulations (CFR) 265, Subpart G, which is invoked and modified by the Washington Administrative Code (WAC) 173-303-400(3)(c)(ix), (as amended in April 2003), and approved by the Washington State Department of Ecology (Ecology) for interim status facilities.

2. Introduction

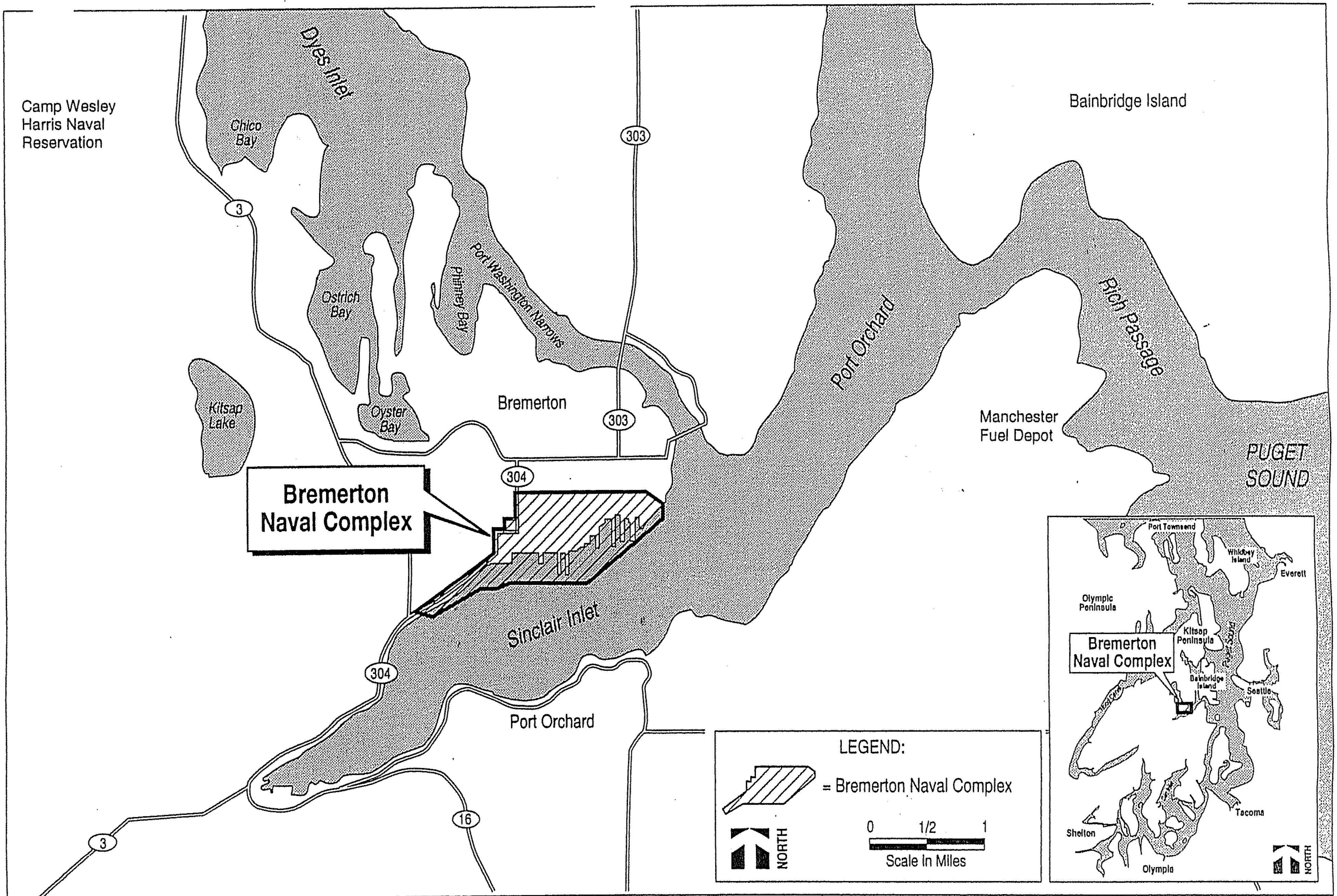
The BNC, located in Bremerton, Washington, consists of two primary areas: Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS & IMF) and Naval Base Kitsap (NBK) at Bremerton. The PSNS & IMF portion consists of 179 acres (hard ground); the NBK covers 203 acres (hard ground). Both are located on Sinclair Inlet. Land use areas at and adjacent to the BNC include industrialized zones (ship maintenance, equipment production, and public works), military housing, and the City of Bremerton.

Building 944/982 TSDF is located in Operable Unit (OU) B Terrestrial, Site 10 West (Figure 2). Previous studies identified that the soil is contaminated. The underlying soil and groundwater falls under the OU B Terrestrial site at the BNC. The Navy is performing remediation of OU B Terrestrial in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The BNC proposes to aboveground clean close the Buildings 944 and 982 TSDF under the Resource Conservation and Recovery Act (RCRA) requirements. The Navy will address the underlying soil and any groundwater contamination as part of the CERCLA remedy, which includes the Washington State Model Toxics Control Act (MTCA) as an applicable or relevant and appropriate requirement (ARAR).

The Building 944/982 TSDF is used for segregation and storage of containerized dangerous wastes until they are ready for shipment to a permitted off-site TSDF or to the on-site Industrial Wastewater Pretreatment Facility (IWPF). A layout of the Building 944/982 TSDF is provided in Figure 3. Waste historically stored at the facility included containerized liquid and solid hazardous waste. The maximum volume of dangerous waste that can be present at the facility at any one time is approximately 158,400 gallons or 2,880 fifty-five-gallon drums or equivalent volume in other container types.

The Building 944/982 TSDF is the only active dangerous waste management unit on the BNC that is subject to permitting under WAC 173-303-806. The entire Building 944/982 TSDF will be aboveground clean closed according to RCRA requirements.

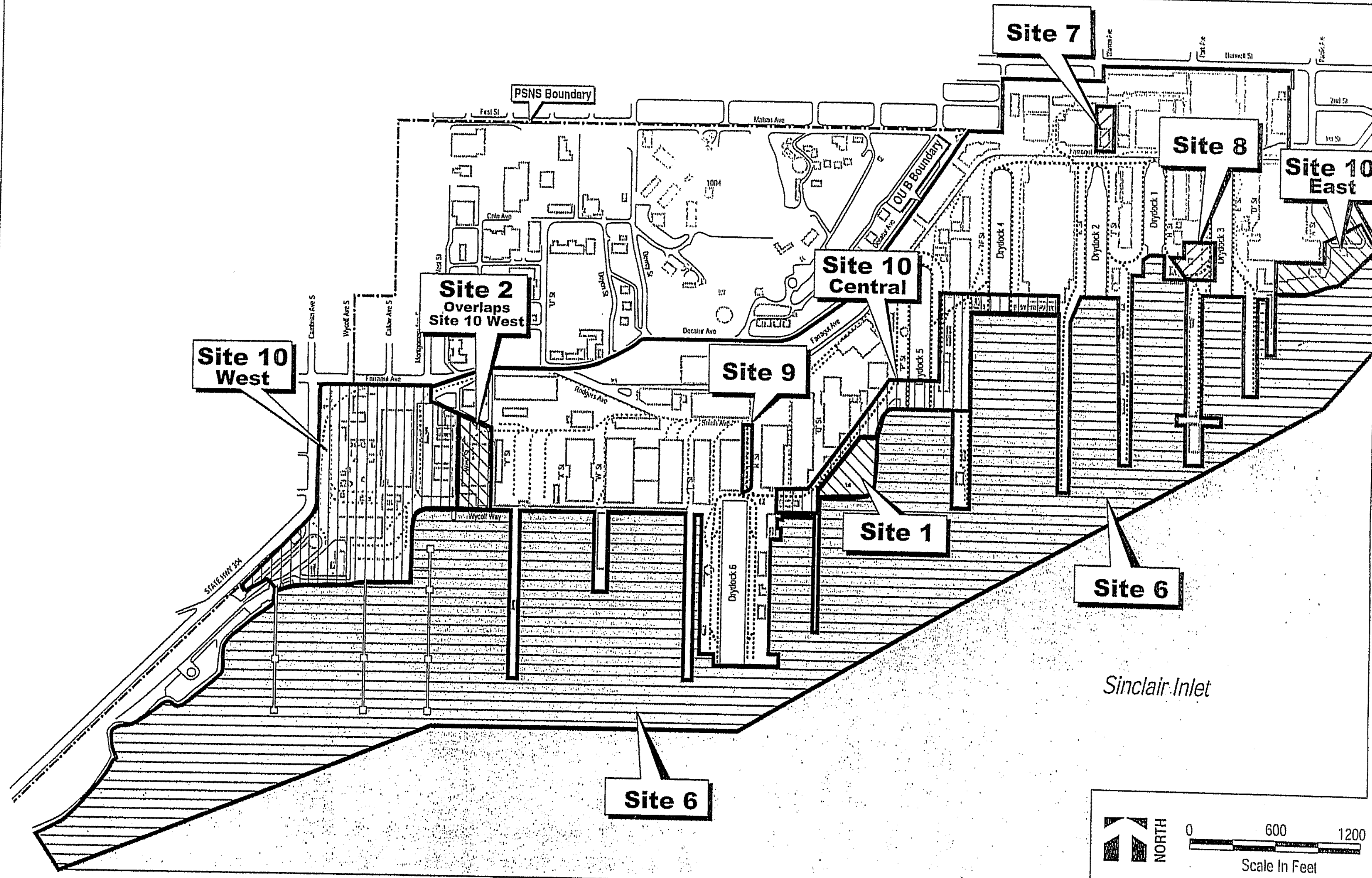
Total demolition of the Building 944/982 TSDF structures and foundations is not called for in this Closure Plan. After completion of the aboveground closure, the Navy will repair any



CLEAN
COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY

Figure 1
Bremerton Naval Complex Vicinity Map

CTO 0131
OU B MARINE
Bremerton, WA
RECORD OF DECISION



CLEAN
COMPREHENSIVE LONG-
TERM ENVIRONMENTAL
ACTION NAVY

Figure 2
OU B Site Locations

CTO 0131
Bremerton Naval Complex OU B
Bremerton, WA
FINAL RI REPORT

53313104-3-030602

damage that may have occurred during closure activities and then continue to operate the Buildings as a dangerous waste accumulation area only. Dangerous waste will be managed according to the requirements of WAC 173-303-200. The BNC will remain a large quantity generator. The Building 944/982 complex will continue to be used as a staging area for off-site container shipments. The Building 944/982 TSDF is currently the only building at the BNC with the capability to manage large quantities and all categories of dangerous wastes in compliance with applicable regulations, codes, and security measures. In order to continue to use the facility to stage dangerous waste for off-site shipment during closure activities, the facility will be divided approximately in half with operations continuing in one half while the other half proceeds through the aboveground closure process. During the closure process, it may be necessary to move dangerous waste to the accumulation area located at Building 367 in the event half of the Building 944/982 facility cannot accommodate all the waste being prepared for shipment. After completion of the aboveground closure activity in the first half of the facility, the Navy will use this half of the facility for staging dangerous waste for off-site shipment (according to WAC 173-303-200) while the second half of the facility undergoes the aboveground closure process.

Closure activities will be monitored by an independent Washington-registered Professional Engineer (PE) as defined in WAC 173-303-040 to certify that, in his/her judgment, closure was accomplished according to the specifications of the Ecology-approved Closure Plan.

The BNC will submit a certification of closure to Ecology, signed by both the BNC and the PE, within 60 days of completion of final closure. The certification will state that the Building 944/982 TSDF was closed in accordance with the Ecology-approved Closure Plan (and any subsequent Amendments, if necessary).

During the closure process, copies of the Closure Plan and any amendments to it will be maintained by the Environment, Safety and Health (ESH) Office at the BNC. The Code 106.3 manager of the ESH Office is responsible for updating this Closure Plan.

Notification concerning closure will be submitted to Ecology in accordance with 40 CFR 265.112(d). The BNC ESH Office will provide the notification at least 45 days prior to the date on which final closure of the facility is to begin.

Revisions to this Closure Plan may be required for the following circumstances:

- changes in the extent of operations or in the Building 944/982 facility design that affects the Closure Plan,
- changes are made in the closure schedule,
- expected year of closure is changed,
- changes in the decontamination procedure of equipment or structures, and
- unexpected events that occur during closure that affect the Closure Plan.

This Closure Plan meets the requirements in 40 CFR 264.111 and WAC 173-303-610(2)(a), and therefore post-closure care is not addressed in this plan. Subsurface releases from the facility's containment systems are remote based on the following:

- dangerous wastes are stored in containers,
- secondary containment is provided for all containers,
- spills are infrequent and are promptly cleaned up upon discovery,
- the unit is inspected daily for spills when in operation,
- results from testing of the water in the rainwater collection tank system has always been characterized as non-hazardous, and
- a significant proportion, approximately two-thirds, of the waste processed at the facility is solid.

3. Facility Description and Maximum Waste Inventory

A plan view of the Building 944/982 TSDF is provided in Figure 3. The facility consists of two office trailers, the Building 944 Break Room, Building 944 covered storage area, Building 982 covered storage area, an uncovered non-hazardous waste staging area, a truck loading area, and a 5,000-gallon rainwater collection tank for the facility. The facility is located outside the south end of Building 513, with the south end exterior of the building being the north end physical boundary of the Building 944/982 TSDF. The rest of the facility is enclosed within a chain-linked fence with lockable gates for security. The area is bermed to control run-on and run-off of liquids, and the whole area is paved with either asphalt or concrete. Each of the storage bays is sloped towards a collection sump to collect any spilled liquids.

The facility is currently managed under the standards of an Interim Status Facility as defined by WAC 173-303-400 and 40 CFR 265 pending closure and conversion to a Dangerous Waste Accumulation site. Operationally, the facility has already been complying with the requirements of a Dangerous Waste Accumulation site (<90 Day site) as defined in WAC 173-303-200 for the past 6 years.

The design capacity of the Building 944/982 TSDF is approximately 158,400 gallons or 2,880 fifty-five-gallon drums or equivalent volume in other container types. This capacity represents the estimated maximum inventory of dangerous waste that could be stored at any one time during the active life of the facility.

The following list summarizes Building 944/982 operation in calendar year 2004:

95+ drum shipments (each shipment typically ranging from 50 to 250 containers)
60+ bulk shipments (each shipment typically ranging from 1 to 8 containers)
Average number of waste containers in inventory 700+
Average number of containers received each week 300+
Average number of containers shipped each week 200+
Average age of shipped containers <18 days

There were over 12,500 containers shipped from the Building 944/982 TSDF in 2004. Breakdown of the waste types and quantities of waste containers shipped are listed below. Only waste types that made up more than 1 percent of the total quantity shipped are included:

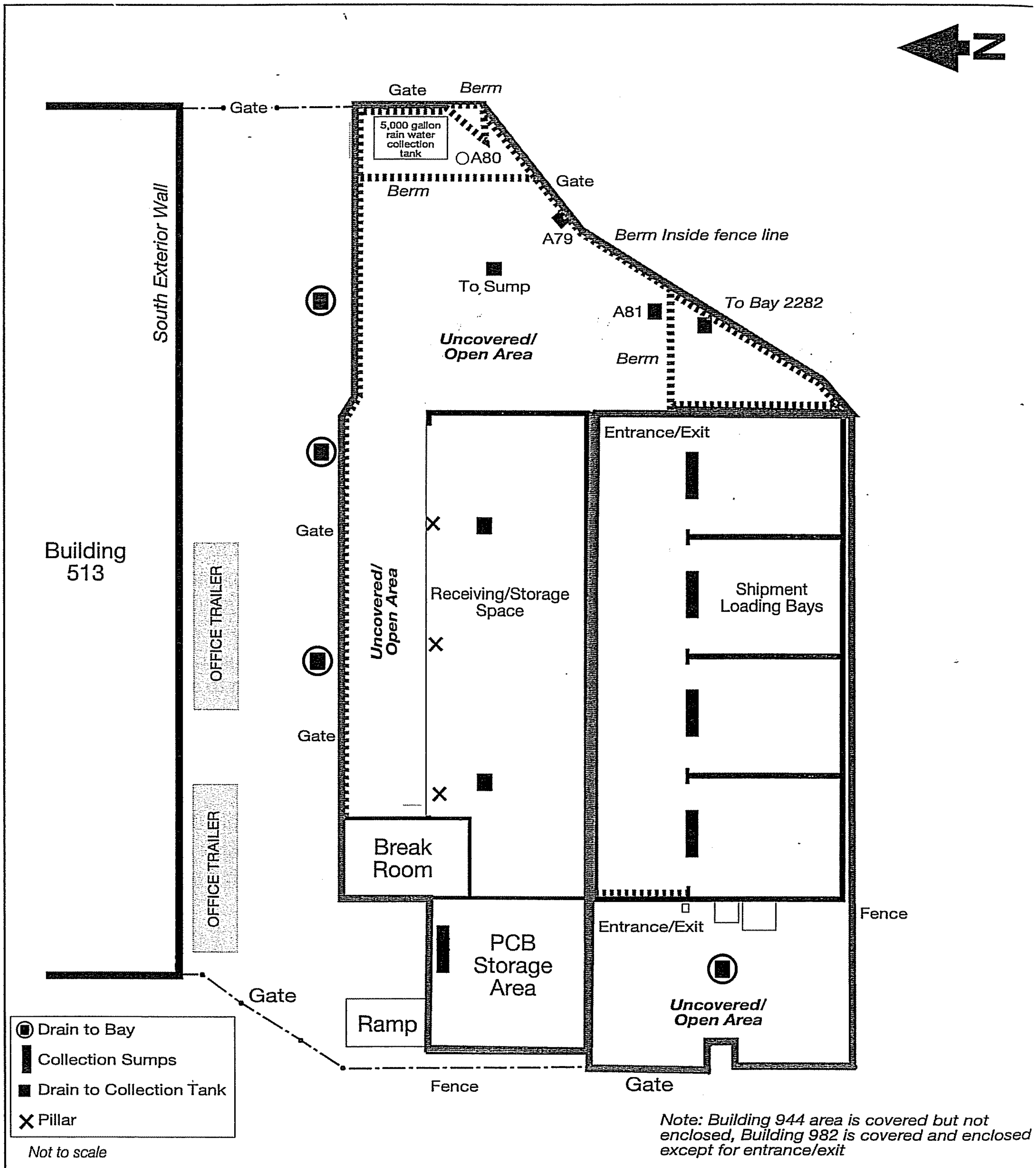


Figure 3
Facility Diagram

WASTE CATEGORY	CONTAINER QUANTITY
Abrasive Blast Waste	417
Cleaning Agents, Acidic	152
Cleaning Agents, Alkaline	209
Solvents/Solvent Cleaning	559
Mechanical Removal (Grinding, Chipping)	252
General Cleaning, N.O.S.	490
Paint Wastes and Thinners	2,256
Adhesives/Resins/Sealants	1,819
Laboratory Wastes	128
Photographic Wastes	195
Testing Wastes	342
Structure Demolition Wastes	255
Coolants	130
Greases	681
Hydraulic Fluids	311
Lubricants	325
Batteries	493
Filters, N.O.S.	197
Lead Wastes	414
Mercury Wastes	157
PCB Wastes	354
Oil	369
Misc. Chemicals, N.O.S.	227
Aerosol Cans (Non-Paint)	581

The dangerous waste is shipped off-site to permitted TSDFs for final disposition by one or more of the following management processes:

- hazardous waste land filling,
- stabilization followed by land filling,
- hazardous waste incineration,
- treatment in a wastewater treatment plant,
- recycling such as distillation or metals recovery,
- hazardous waste fuel blending, or
- storage followed by one of the above treatments.

The waste management process depends on the type of waste, operation constraints of the receiving TSDF, and the Land Disposal Restrictions (WAC 173-303-140 and 40 CFR 268). The maximum distance that waste is being transported is approximately 300 miles (e.g., Arlington, Oregon).

Some dangerous waste is treated at the BNC's permit by rule IWPF, Building 871. For estimating closure costs and preparing this Closure Plan, all dangerous waste at the Building 944/982 TSDF is assumed to be shipped to off-site TSDFs.

4. Geology at the BNC

(1) Fill Material

(A) Fill material is the surficial unit present at the site. The fill unit is composed of layers of sand, gravelly sand, and sandy silt. These layers vary from less than 1 foot to 15 feet thick. The fill unit varies from 0 to 34 feet thick across the BNC site. The color of the fill material varies from light brown to olive gray, dark brown, and black. Sands and gravel range in density from very loose to very dense. The sand grains are predominantly rounded.

(B) Most of the fill material at the BNC was placed when the facility was expanded along the old Sinclair Inlet shoreline in support of war efforts. Another major expansion occurred during the early 1960s when additional fill material was placed on site to expand the facility in a southwestern direction. The fill from both these expansions contained a variety of materials and debris including oily waste, automobiles, coal, and sandblast grit. Materials found in the fill material during previous site investigations included wood, concrete, glass, and metal fragments.

(2) Estuarine, Alluvial, or Both Types of Deposits

(A) Estuarine deposits from Sinclair Inlet, alluvial deposits from buried stream channel(s), or both types, were distinguished from overlying fill material by absence of manmade debris discussed in the paragraph above. These deposits are encountered immediately below the fill material or in the surface material. The estuarine, alluvial deposits, or both types of deposits range from 0 to more than 40 feet thick.

(B) The estuarine, alluvial, or both types of deposits consist of sandy gravel, gravelly sand, and sand with sandy silt, silt, and clayey silt lenses or layers. The color of these deposits ranges from light yellowish brown to dark brown. Sand and gravel layers range from very loose to medium dense. The sand and gravel grains are subrounded to angular, ranging from fine to coarse-grained (sands) and from 0.25 to 2 inches in diameter (gravel).

(3) Glacial Deposits

(A) Glacial deposits are distinguished from overlaying estuarine, alluvial, or both types of deposits by density variations between the two units. These deposits were encountered in most of the borings during CERCLA related site investigations (URS Consultants, Inc [URS] 2002). The thickness of glacial deposits underlying the site has not been determined. However, borings indicate the deposits may be as thick as 400 feet or more at the BNC.

(B) The glacial deposits consist of gravel, gravelly sand, and sand ranging in color from moderate yellowish-brown to brown. The sand and gravel layers are very dense. The sand grains are fine to coarse grained and are subrounded to angular. The gravel ranges from 0.25 to 2 inches in diameter.

5. Hydrogeology at the BNC

Hydrogeological characteristics at the BNC are described below.

(1) There is an upper and lower sand and gravel aquifer within Kitsap County. The upper aquifer overlies a silt and clay aquifer throughout the area, and the base of the aquifer ranges from near sea level to 200 to 300 feet above sea level. The saturated thickness of this aquifer ranges from 20 feet to more than 200 feet. Wells in this unconfined aquifer have water level elevations ranging from near mean sea level (msl) along the coast to 240 feet or more above msl in the interior uplands.

(2) The lower aquifer occurs at elevations ranging from slightly above msl to approximately 300 feet below msl. The aquifer thickness ranges from a few feet to more than 300 feet. The piezometric surface of the lower aquifer is above the upper aquifer and, in lowland areas, the wells flow under the artesian pressure. The movement of the groundwater in both aquifers is in the direction of Sinclair Inlet, southeast.

(3) The chemical quality of most groundwater throughout the area appears to be consistent with groundwater encountered in similar geologic areas in Puget Sound. Historical records indicate that the relatively high annual precipitation rate (45 inches per year) results in low dissolved solids in the groundwater, typically less than 150 milligrams per liter (mg/L). However, shallow wells very near the shoreline may have high chloride concentrations due to saltwater intrusion.

(4) Groundwater elevations have been measured during various investigations and monitoring conducted in the BNC. A quantitative review of the data indicates that the fill areas are hydraulically connected to Sinclair Inlet and are not suitable for drinking water purposes. As determined in the CERCLA Remedial Investigation (RI) (URS 2002), groundwater flow in the area of Building 944/982 TSDF is from the northwest to the southeast during low tide, and reversed (southeast to northwest) during high tides. Groundwater depths average approximately 5 feet below ground surface (bgs) with groundwater fluctuations between 3 and 12 feet bgs. Two primary factors influence the depth to groundwater in the Site 10 West area, the tide range, and the pumping rates at Dry Dock 6. Hydraulic conductivities in this area range from 1.13E-02 to 8.52E-04 centimeters per second (cm/sec) and average 6.1E-03 cm/sec. Average groundwater field parameters are as follows:

Temperature:	16.2°C
pH:	7.09
Specific conductance:	4,570 S/cm^2
Dissolved oxygen:	3.91 mg/L

Turbidity:	14.56 nephelometric turbidity units (NTUs)

6. Previous Investigations

The Navy conducted several investigations at the BNC near Building 944/982, which are summarized below. A comprehensive listing of previous terrestrial investigations at the BNC is provided in Table 1.

(1) In November 1990 and April 1991, a site inspection (SI) was conducted at 10 sites within the BNC (Figure 2). One of these sites, known as Site 10, was divided into three additional sub-sites (10 East, 10 Central, and 10 West). The Building 944/982 TSDF is located within Site 10 West. The purpose of the SI was to determine the presence of contaminants at the sites and to provide the U.S. Environmental Protection Agency (EPA) with sufficient data and information to score the BNC sites pursuant to the Hazard Ranking System and determine whether a National Priorities List (NPL) listing was required for long-term evaluation and response. In accordance with CERCLA, the BNC was listed on the NPL in May 1994.

The SI for Site 10 West included 11 soil borings for collection of soil samples. Samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and inorganic constituents. In addition, four of the borings were completed as groundwater monitor wells. Groundwater samples were collected and analyzed for VOCs, SVOCs, cations/anions, and total and dissolved inorganics. Groundwater sampling results identified seven chemicals of concern (COCs) including arsenic, cadmium, chromium, copper, lead, mercury, and nickel. COCs were based on exceedances of the MTCA Method A levels and the federal Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) or exceedances of 3 times the study-derived background groundwater concentrations. Surface and subsurface soil COCs were also identified based on these parameters and included cadmium, copper, lead, mercury, nickel, and zinc. Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) were also identified as COCs for both surface and subsurface soils.

(2) In accordance with the RCRA facility permit requirements, EPA performed a RCRA Facility Assessment (RFA) of the BNC in 1992. The RFA included a review of waste handling procedures and the identification of current and historical Solid Waste Management Units (SWMUs) where solid or hazardous wastes were placed, stored, treated, or disposed at any time. The findings of this report identified the Building 944/982 TSDF as SWMU 33. The assessment included a file review and a preliminary SI in accordance with RCRA regulatory requirements. No sampling efforts were conducted.

Table 1. Summary of Previous Terrestrial Investigations

DATE	TERRESTRIAL INVESTIGATION	INVESTIGATOR
Mar-1983	Initial Assessment Study (IAS) of Puget Sound Naval Shipyard	NEESA
Jun-1990	Preliminary Assessment	NEESA
Nov-1990	Time Critical Removal Action at IAS Site 2	URS
May-1992	Site Inspection (SI)	URS
Dec-1992	RCRA Facility Assessment of Puget Sound Naval Shipyard for the U.S. Environmental Protection Agency, Technical Enforcement Support at Hazardous Waste Sites, Zone IV, Regions 8, 9, 10.	PRC
1989-1993	Misc. Geotechnical and Environmental Studies Conducted Prior to Construction at Puget Sound Naval Shipyard. (Shannon & Wilson 1991, 1992, 1993; GeoEngineers 1992; Hart Crowser 1991: Stan Palmer Construction and Pacific Testing Laboratories 1989; and Bouillon Christofferson & Schairer, Inc. 1994)	
Jan-1994	Rapid response at Mooring G (Paint Can Removal)	Ebasco
Jul-1994	Remedial Investigation Report – Phase 1	URS
Sep-1994	Closure of Structure 614	Ebasco
Oct -1994	Site 8 Closure Investigations	Ebasco & URS
1992-1995	Stormwater Investigations	Emcon Sitts & Hill
1995	Investigation of Subsurface Soil Beneath Building 873	URS
1995	UST Removals	GTI
1995	USGS Drydock Study	Prych
1995	Remedial Investigation Report – Phase II	URS
Mar-1999	Final Remedial Investigation Report	URS
Nov-2000	Soil Characterization Buildings 874, 899, 944, and 982 Operable Unite B, Site 10 West	Hart Crowser
Aug-2003	RCRA Closure of Hazardous Waste bulk Liquid Storage Facility, Building 874	Foster Wheeler
Aug-2003	RCRA Closure of PCB Equipment Storage Facility, Building 899	Foster Wheeler
April 2005	Bldg 944/982 Closure PCB Sampling, 5090 Ser 106.33/0192	U.S. Navy

GTI = Groundwater Technology Government Services, Inc.
NEESA=Naval Energy and Environmental Support Activity
PRC = PRC Environmental Management, Inc.
URS = URS Consultants, Inc.

(3) As part of the CERCLA NPL process, the Navy conducted an RI at OU B from 1993 to 1996. The Site 10 West area was included in this investigation. During the RI, several groundwater monitor wells within the Site 10 West area were sampled for VOCs, SVOCs, pesticides, PCBs, inorganics, and total petroleum hydrocarbons (TPHs). Results of the groundwater sampling did not indicate additional COCs beyond those previously identified. There were no soil borings conducted within the boundaries of the Building 944/982 TSDF. Soil boring 666 was completed in an area approximately 250 feet west of the Building 944/982 TSDF (Figure 4). Results of the surface and subsurface soil sampling did not indicate any new COCs beyond those previously identified. PCB sampling conducted at this location also did not indicate PCBs present in excess of the study-derived background concentrations.

(4) In August 2000, Hart Crowser conducted a soil characterization study for the Building 874 Tanks and Buildings 944/982/899 areas (Hart Crowser 2000). Twenty-one samples were collected to a depth of 4 feet. The locations of those samples collected around Buildings 944/982 are shown in Figure 5. The study concluded that though MTCA exceedences were detected in the site soils, the contaminants were most likely not associated with site activities but were present in the fill material when placed. These concentrations could be considered to be representative of site background conditions. Chemicals with exceedences were all previously identified COCs.

(5) The BNC recently completed RCRA closure of the Hazardous Waste Bulk Liquid Storage Facility (Building 874) and the PCB Equipment Storage Facility (Building 899), which were located approximately 200 to 350 feet to the west of the Building 944/982 TSDF. Groundwater monitoring and soil boring sample results during closure activity did not indicate any new COCs beyond those identified in previous studies. The locations of the groundwater monitor wells installed as part of the closure activity are provided in Figure 6. Through site sampling efforts, the site has been characterized and subsurface cleanup has been deferred to the CERCLA remedy as agreed by EPA, Ecology, and the Navy and as described in the OU B Terrestrial Record of Decision (ROD) (Navy 2004).

(6) In April 2005, the Navy completed a PCB swipe sampling survey in the PCB storage areas of the Building 944/982 TSDF. The Sampling Plan was developed using EPA TSCA guidance utilizing hexagonal grids and discrete samples. Laboratory analysis of the swipe samples did not detect the presence of PCBs (PSNS & IMF 2005).

7. Closure Performance Standard

The closure performance standard as provided in 40 CFR 265.111 (as referenced by WAC 173-303-400) and WAC 173-303-610 states that the owner or operator must close the facility in a manner that:

- Minimizes the need for further maintenance, and
- Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of dangerous waste, dangerous constituents,

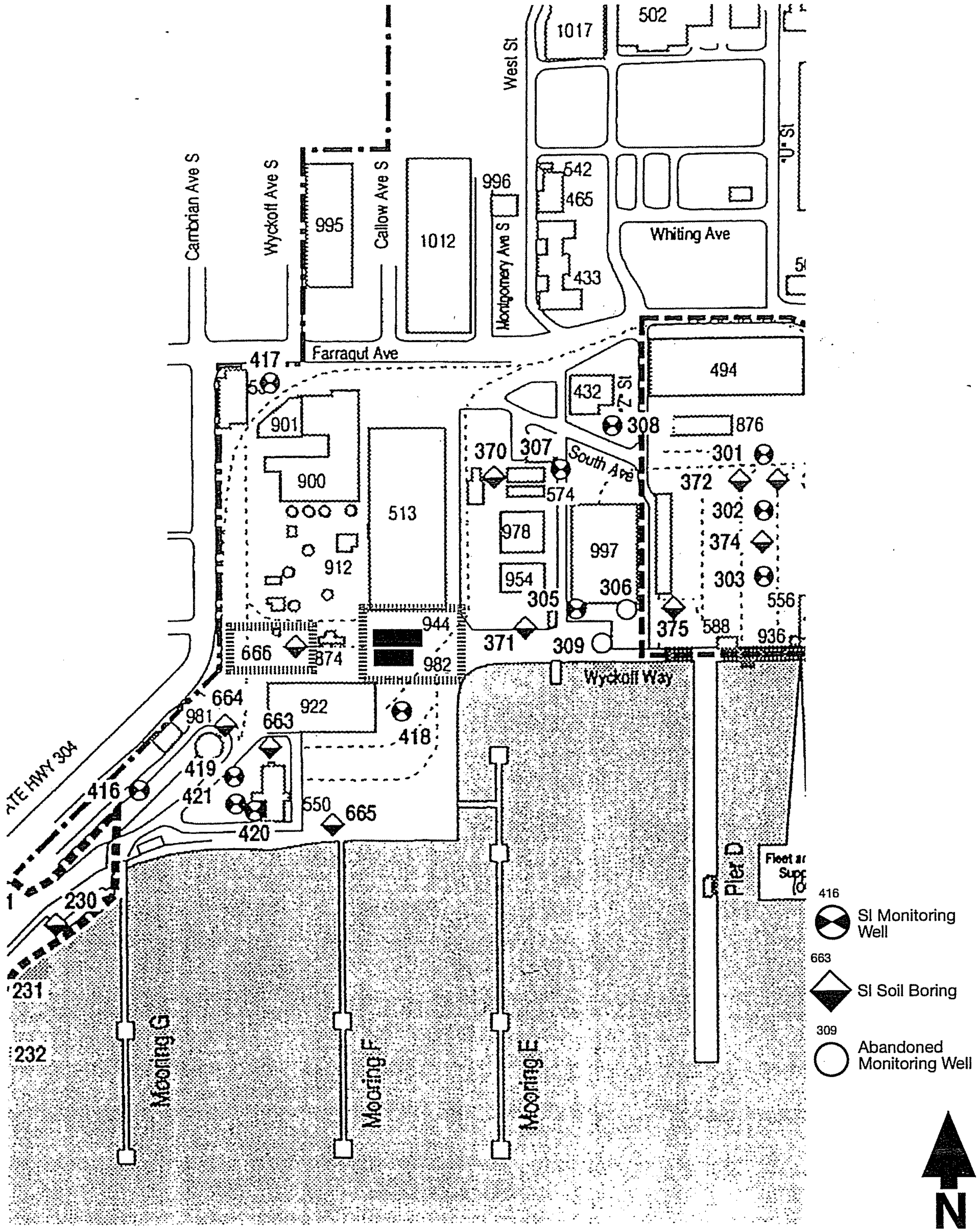


Figure 4
Monitoring Wells and Soil Borings from the SI and Time Critical IAS Studies

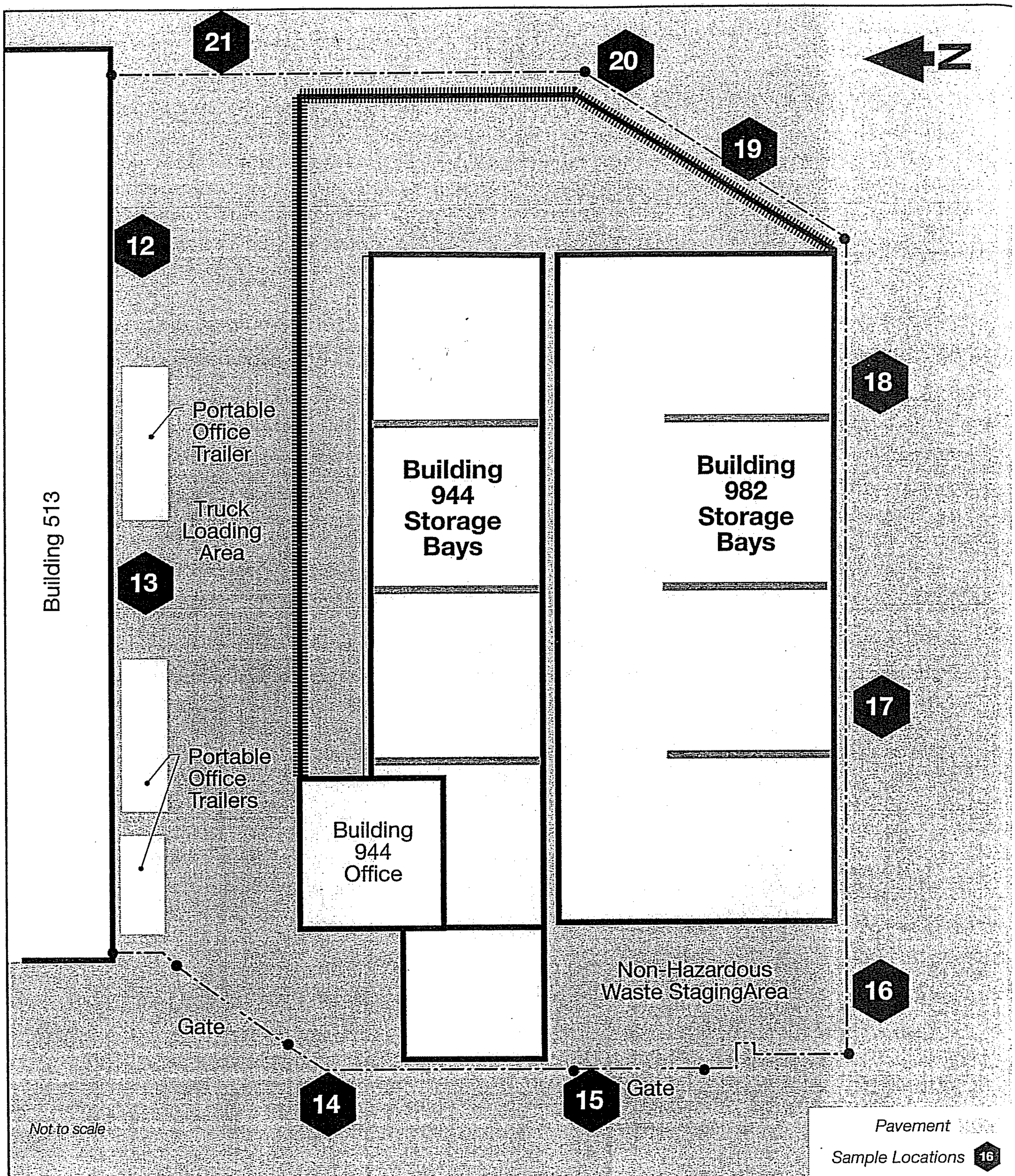


Figure 5
August 2000 Soil Characterization Sample Locations

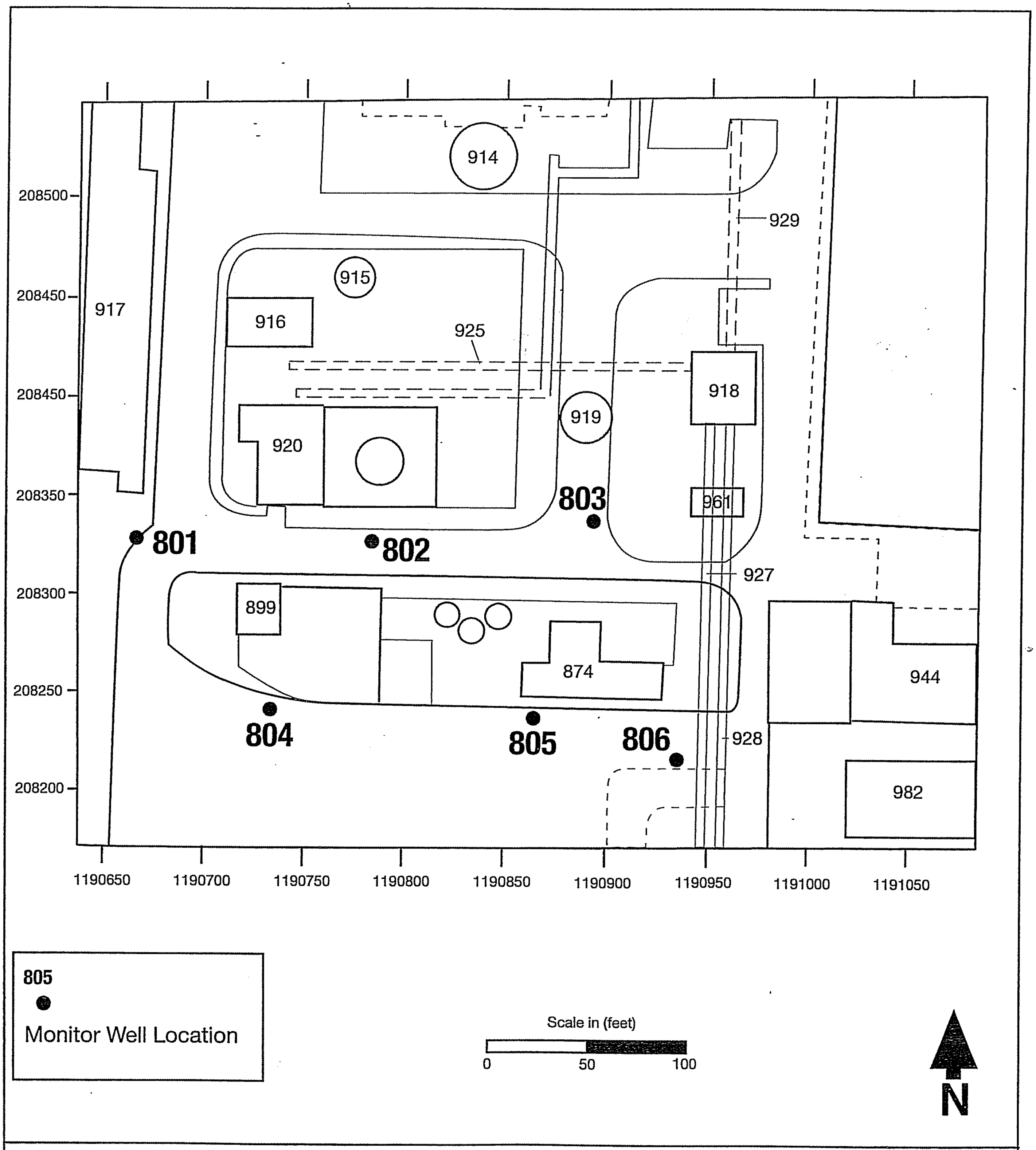


Figure 6
Groundwater Monitor Well Locations

leachate, contaminated run-off, or dangerous waste decomposition products to the ground or surface waters or the atmosphere, and

- Returns the land to the appearance and use of surrounding land areas to the degree possible given the nature of the previous dangerous waste activity.

These goals will be accomplished by removing all dangerous wastes and all dangerous waste residue from the containment system and by removing or decontaminating containers, liners, equipment, and foundations. The Building 944/982 TSDF lies within the industrialized area of the BNC and the land will therefore be returned to the appearance and use of the surrounding land areas.

8. Subsurface Remediation Performance Standards

Remediation of below ground contaminants within OU B Terrestrial is currently addressed in the ROD signed by the EPA, Ecology, and the Navy (Navy 2004).

After collecting and analyzing thousands of samples, the Navy, EPA, and Ecology are in agreement that there is minimal risk for human contact at the BNC, as long as it remains an industrial site. Remediation efforts are being conducted to minimize the ability of contaminated soil to migrate to Sinclair Inlet where it might cause risks above acceptable levels to subsistence seafood harvesters consuming bottom-dwelling fish exposed to contaminated sediments. The major components of the Selected Remedy for OU B Terrestrial are as follows:

- Storm water facility restoration – includes sediment and debris removal, inspection of the integrity of the stormwater lines and catch basins, and repair or replacement of damaged storm drain lines and catch basins where required and feasible.

- Installing pavement or clean soil with vegetation in unpaved areas and repairing existing damaged pavement to limit potential infiltration of water into the soil.

- Shoreline stabilization – repair portions of the existing shoreline protection system that have the potential to erode.

- Institutional controls – development and implementation of excavation management and land use control plans and groundwater use restrictions.

- Groundwater monitoring – installation and regular monitoring of wells.

The contaminated soils and storm drain sediment at OU B Terrestrial are not principal threat wastes as defined by EPA. Principal threat wastes are source materials considered highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur.

Subsurface contamination is present based on numerous investigations and projects performed over the years within OU B Terrestrial. This contamination poses little or no threat to the environment or human health if left undisturbed and capped under an impervious surface.

9. Specific Performance Standards

The intent of this Closure Plan is to address actions necessary to clean close the aboveground portions of the Building 944/982 TSDF. Below ground remediation is pursuant to the ROD's Selected Remedy (Navy 2004). Soil sampling will be conducted according to Attachment A, with results used as an additional source of data to characterize the site within OU B Terrestrial, Site 10 West. Once the aboveground portions of the facility are certified RCRA closed, the facility will be reused for staging dangerous wastes for off-site shipment according to the requirements of WAC 173-303-200 (accumulating dangerous wastes on-site for no more than 90 days).

The basis for limiting this closure plan to the aboveground portions of the facility is as follows:

- Historical knowledge of the types of fill material that were used in the area as the BNC expanded over the years.
- Soil and groundwater sampling results from the numerous studies undertaken at the BNC have already characterized the subsurface material in the area known as OU B Terrestrial site, 10 West. Subsurface cleanup of this area is managed under the ROD's Selected Remedy (Navy 2004).
- The facility is paved with asphalt or concrete.
- All areas drain to a sump or a collection trough within the facility.
- The rainwater collection system is sampled prior to emptying, and records show that all samples have been characterized as non-hazardous, which has allowed draining of the tank to the sanitary sewer system.
- The facility is inspected daily, when in use, for any leaks or spills.
- Dangerous wastes are stored in containers.
- Secondary containment is provided for all containers.
- Spills are infrequent and are promptly cleaned up upon discovery.
- The Building 944/982 TSDF makes up a small land portion, approximately 2.5 percent of the overall land OU B Terrestrial site, 10 West area.

- This approach is consistent with the RCRA clean closure recently completed for the Hazardous Waste Bulk Liquid Storage Facility (Building 874) and the PCB Equipment Storage Facility (Building 899) with subsurface cleanup addressed under the CERCLA Program. Soil sampling and groundwater monitoring was completed in this area to provide additional OU B Terrestrial site, 10 West characterization data.

- As part of the BNC's Part B permit submittal to Ecology, the closure performance standard for the Building 944/982 TSDF was written such that groundwater and soil sampling activities were not part of the closure plan.

The specific aboveground clean closure performance standard is met when post-inspection determines that no visual signs of contamination are present.

10. Description of Closure Activities

Prior to the commencement of closure activity, the facility will manage dangerous waste in accordance with the requirements of WAC 173-303-200. Off-site dangerous waste will no longer be accepted and the accumulation time for on-site generated dangerous waste will not exceed 90 days. The facility has been managing dangerous wastes under these requirements for the past 6 years, and will continue to do so at the completion of closure activities.

The facility will be divided into two sections, with operations being maintained in one half while the other half undergoes closure activity. The section that remains in operation will be managed in accordance with the requirements of WAC 173-303-200. The section that is undergoing closure activity will either have its dangerous waste shipped off-site or transferred to the half of the facility that will remain in operation. It may be necessary during the closure process to move dangerous waste to the accumulation area in Building 367 in the event storage capacity of the operational half of the Building 944/982 facility cannot accommodate all wastes being generated. The section that will undergo closure first will be identified as Area A, and the other section as Area B. The Area A and Area B designations are shown in Figure 7. The cleaning process will be as follows:

1. Clear Area A
2. Decontaminate Area A and clear Area B
3. Decontaminate Area B

Equipment will be inspected for signs of contamination before they are returned to service in the area that has undergone closure. Equipment that will no longer be used will be decontaminated and properly disposed. Equipment that will be returned to service and deemed to be contaminated will be decontaminated prior to reuse.

Utility vaults in Areas A and B will be covered during decontamination activities; they will not be decontaminated as part of the closure activity.

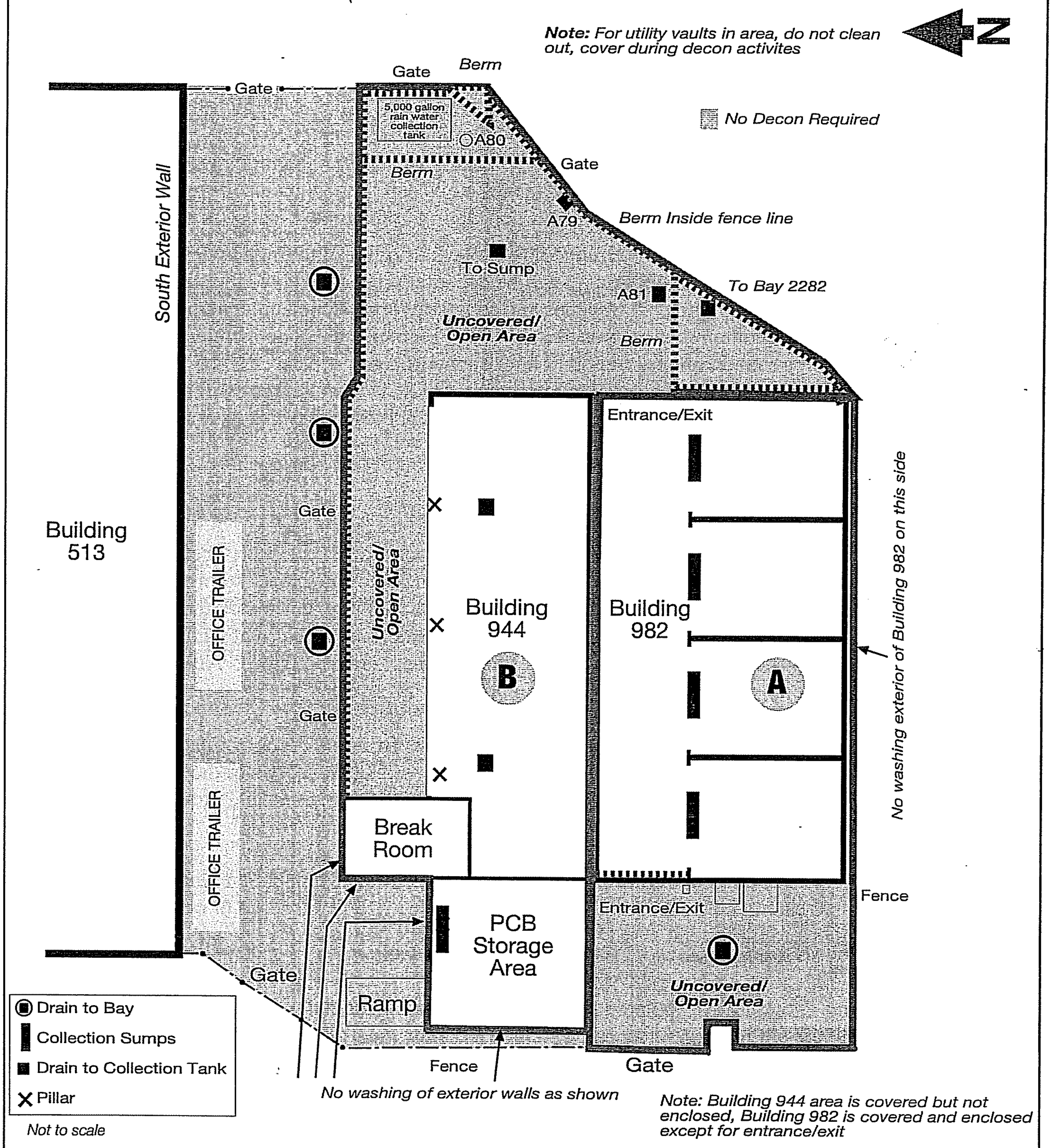


Figure 7
Decontamination Order

Loss of TSDF status for the facility requires stricter PCB storage requirements as detailed in 40 CFR 761.65. Storage of PCB in the Building 982 area prior to shipment must meet the requirements of 40 CFR 761.65(b)(1)(i), which requires floors and curbing be constructed of Portland cement, concrete, or a continuous smooth, non-porous surface. 40 CFR 761.3 defines non-porous to be a smooth, unpainted solid surface. Therefore, as part of the decontamination process, the paint on the bay floors of Building 982 will be removed.

11. Decontamination Procedures

Once all containers have been removed from one half of the Building 944/982 TSDF, the facility and equipment (if necessary) will be decontaminated. Prior to the start of decontamination activities, all trenches and sumps will be cleaned out and the debris disposed of properly. Decontamination procedures will be implemented for concrete/asphalt surfaces, containment trenches/sumps, and other likely contaminated structures at the Building 944/982 TSDF. The fiberglass insulation on the walls of the PCB Storage Area will also be removed and disposed of properly. Emphasis will be placed on those areas that have had direct contact with dangerous wastes or waste residues.

(A) Decontamination Waste Management

Decontamination wastewater from each task described below will be managed in drums, holding tank(s), or tanker(s) staged in one of the empty storage bays. Holding tank(s) or tanker(s) may be staged outside the building, but within the Building 944/982 TSDF boundaries, due to space or other considerations. Normal facility inspection and emergency procedures will be in effect during closure activities. All wastes will be properly managed, designated, and properly disposed.

Plastic sheeting, tape, and other spent supplies from the decontamination process will be managed in labeled drums or lined containers until analysis of the wastewater is complete. If the retained wastewater must be managed as a dangerous waste, the spent supplies will also be managed as dangerous waste.

Waste consisting of pieces of equipment, structural or foundation sections, or debris that cannot be cleaned to a clean debris surface will be disposed of off-site as dangerous waste at a TSDF permitted to accept the waste.

(B) Waste Analysis

All laboratory analyses for waste designation will be performed by a laboratory accredited by the State of Washington under WAC 173-50 and approved under the Navy's Laboratory Evaluation Program. The laboratory will have current accreditation for each analytical method that will be needed for the project.

(C) Segregation of Incompatible Waste

The Building 944/982 TSDF stored only containerized waste. Management of dangerous waste in direct contact with the containment systems (trenches/sumps) or on the bay floors was prohibited. Spills of dangerous waste were promptly cleaned up when they occurred. Therefore, significant residues of dangerous wastes are not expected to be present on any of the surfaces to be decontaminated. As a result, decontamination wastewater and debris (such as plastic sheeting) should not contain significant concentrations of dangerous waste constituents. Therefore, there should not be chemical incompatibility between wastewater and debris from the decontamination processes.

(D) Worker Safety and Health

The expected level of personal protective equipment (PPE) is modified Level D for the decontamination phase of the closure activities. Modified Level D consists of disposable Tyvek coveralls or reusable polyvinyl chloride (PVC) raingear, PVC steel-toed boots, hardhat, safety glasses and/or chemical splash goggles, and nitrile gloves. Face shields and hearing protection may be required for certain tasks.

The section of the facility undergoing decontamination will be identified with warning tape or other physical warning markers during decontamination. Workers will enter and exit this delineated area through marked entry/exit points. Workers will doff or decontaminate clothing before leaving the area. Workers will dispose of used protective equipment, debris, wastewater, or decontamination solutions in appropriate containers.

(E) Sequence of Decontamination Activities

(1) <u>Preliminary Inspection of Building Components</u> – Prior to the start of aboveground closure activities of the designated section, all waste containers will be removed. A preliminary inspection of building components will then be performed. All floor, containment troughs/sumps, transportation aisle, and loading/staging surface areas will be visually inspected for cracks, gouges, or other openings that may have exposed underlying soil to previous spills. Lower wall portions (up to 6 feet above floor level) and doors will be inspected for stains, discoloration, or signs of contamination. During the visual inspection, any stains on surface areas that might suggest the presence of contamination will be noted. The locations of cracks, gouges, erosion, spalling, joint problems, stainage, or other damage will be noted on a diagram of the facility. This diagram will be drawn to scale, show orientation and location with respect to fixed references (such as support columns), and show suspect areas with qualitative information, where necessary, and quantitative information such as crack depth and width, where measurable. The written documentation will be augmented with photographs. Ecology will be invited to attend the Preliminary Inspection, but inability to attend will not be reason to delay the inspection.

(2) Sealing of Containment Structures – Cracks and openings identified in the Preliminary Inspection will be sealed with material resistant to water, temperature, and the cleaning solutions that will be used during decontamination. The sealant will consist of a silicon type caulking material or other construction-type sealant compatible with the surface being sealed. The sealant will be applied according to the manufacturer's instructions.

(3) Equipment Decontamination – Equipment that has been used in the management and handling of dangerous waste, but is not required for the closure activity will be inspected and evaluated for the need for decontamination. If decontamination is necessary, this will be performed before decontamination of the building components. Equipment decontamination will be performed in one of the empty waste storage bays. The following large items of equipment, in addition to smaller items such as hand tools, will need to be evaluated:

- forklifts and fork attachments,
- cabinets and hazardous waste lockers,
- tables,
- drum compactor, and
- drum scale.

This equipment has surface types consisting of metal, painted metal, painted wood, plastic, glass, and rubber. This equipment is not intended for disposal.

Equipment that will be decontaminated and have components that could possibly be damaged by the cleaning process will be wrapped in plastic and taped or otherwise protected. Examples of these components would be electrical wiring, control panels, and fragile areas that may be damaged by direct water pressure. The external surfaces will then be cleaned per the following steps:

1. pressure wash with detergent solution,
2. scrubbing,
3. pressure wash with hot tap water (≥ 140°F)
4. pressure wash with detergent solution,
5. scrubbing, and
6. pressure wash with hot tap water (≥ 140°F).

Scrubbing will be performed with brushes, stiff brooms, or similar tools. Water pressure and residence time will be determined by the requirement to clean the surface while not damaging the equipment. If not feasible to clean a piece of equipment using the procedure described above, the equipment will be cleaned by hand.

After the decontamination process, the equipment will be visually re-inspected to determine if a clean debris surface has been achieved. If equipment visually appears to be contaminated, the decontamination process will be performed one more time.

Internal surfaces that have come in contact with dangerous waste will be decontaminated according to the same cleaning process as external surfaces, except some disassembly may be required. Internal surfaces such as hydraulic systems and electrical components that have not been in contact with dangerous waste will not be decontaminated in order to avoid possible equipment damage.

Surfaces which were covered or otherwise protected prior to the cleaning process will be cleaned by hand with detergent and water.

Wastewater and rinsates will be collected from the containment troughs/sumps and placed into drums, holding tank(s), or tanker(s). Wash water from decontamination of the different pieces of equipment or from different wash cycles will not be segregated. These wastewaters will be analyzed and disposed of properly.

(4) Decontamination of Building Components – Prior to cleaning, plastic sheeting or other moisture barriers (protective barrier) will be placed at the outside perimeter of the work area to contain possible overspray from reaching already decontaminated areas or areas not subject to closure. Protective barriers will either be draped, taped, bermed, or sloped to form an enclosure or barrier so that runoff will not escape the facility undergoing decontamination. Precautions will be taken to prevent tearing or puncturing of the protective barrier. If during the decontamination process the protective barrier is damaged, work will stop until the barrier is replaced or repaired. Building vents or gaps at the base of walls and doors will be covered or blocked to prevent leakage of wash waters outside the building.

The surface of each area that showed visual signs of contamination, as documented in the Preliminary Inspection, will be decontaminated as described below. The decontamination process will extend at least a foot beyond the area of contamination. The troughs/sumps will be the last areas to be decontaminated.

Concrete/asphalt floors, lower wall portions (internal surfaces up to 6 feet above floor level), aisles, and doors (internal surfaces) will be decontaminated using the following process:

1. pressure wash with detergent solution,
2. scrubbing,
3. pressure wash with hot tap water (≥140°F),
4. pressure wash with detergent solution,
5. scrubbing, and
6. pressure wash with hot tap water (≥140°F).

Lower wall portions will be scrubbed with a stiff broom, scrub brush, or similar tool. Floor areas will be scrubbed with a floor scrubber with wire or nylon brushes, with at least two passes over the contaminated area.

Troughs/sumps will be decontaminated according to the following process to minimize overspray of potentially contaminated cleaning process liquids:

1. hand wash and hand scrub with detergent solution,
2. low pressure rinse with hot tap water ($\geq$140°F),
3. remove (pump out) liquid from trough/sump,
4. hand wash and hand scrub with detergent solution,
5. low pressure rinse with hot tap water ($\geq$140°F),
6. remove (pump out) liquid from trough/sump,
7. low pressure rinse with hot tap water ($\geq$140°F), and
8. remove (pump out) liquid from trough/sump.

The surface areas described above are composed of coated concrete, concrete, asphalt, metal, painted metal, glass, wood, and plastic. These surfaces will be cleaned to clean debris standards. If contamination is still visible after the first decontamination process, the decontamination process will be repeated.

Metal, painted metal, plastic, or glass surfaces that cannot be visually verified clean by the above process will receive additional cleaning. Abrasive methods such as sanding, grinding, or shot blasting will be employed to remove the uppermost portion of the surface to achieve a clean debris surface.

Concrete, coated concrete, and asphalt surfaces that cannot be visually verified as clean by the above process will receive additional cleaning. Abrasive methods such as sanding, grinding, spalling, or shot blasting will be employed to remove the upper portion of the surface (at least 0.6 cm of material, not including coatings). If visual signs of contamination are still evident after the described abrasive cleaning method, additional abrasive cleaning will continue until no visible signs of contamination are present. If necessary, the removal of concrete or asphalt sections may be required to remove all signs of contamination. Removed sections will be containerized, designated under the Dangerous Waste regulations, and disposed of properly.

(5) <u>Cleaning Equipment Decontamination</u> – Equipment used in the closure process will be decontaminated after completion of building component decontamination. Decontamination of the cleaning equipment will be performed in one of the empty storage bays in the same manner as described in the equipment decontamination process.

The cleaning area will be covered with at least a 10-mil-thick plastic or equivalent multiple layers of plastic and be bermed to prevent leakage of wastewater into the containment trough/sump or onto the floor. Plastic barrier walls may also have to be erected to prevent the overspray from reaching uncontaminated areas or collecting in the containment trough/sump. Precautions will be taken to prevent tearing or puncturing the plastic. These precautions will include minimizing equipment and worker movement on the plastic and the placement of wood or metal sheets on top of the plastic. If there is a tear or puncture in the protective plastic barrier, the decontamination process will stop until repairs are made or the plastic is replaced.

(6) Post-Decontamination Restoration - After decontamination activities, the pavement will be evaluated to ensure it is consistent with the OU B Terrestrial ROD remedy. If necessary, the pavement will be repaired (e.g., seal coat, patch, or replace).

(7) Post-decontamination Inspection – At the completion of all decontamination processes, a post-facility inspection will be performed to verify the aboveground clean closure performance standard has been met (Section 12). The diagrams produced in the Preliminary Inspection process will be updated to reflect any additional problems that may have been revealed during the decontamination process. Any updated written documentation will be augmented with photographs. This information will be communicated to Ecology in the Clean Closure Report.

(F) Portable Office Trailers and Building 944 Break Room

These structures are used in the administrative support of operations at the Building 944/982 TSDF and are not considered to be part of the physical waste handling areas of the facility. Workers at the Building 944/982 TSDF are required to follow applicable federal, state, and local regulations regarding cleanliness and hygiene practices for handling hazardous/dangerous wastes. These structures have scheduled janitorial services that maintain cleanliness of the interior spaces. Based on these factors, it is therefore unlikely that these structures are contaminated. To confirm this, these structures will be inspected as part of the Preliminary Inspection process.

Should signs of internal contamination be found, removal will be by hand cleaning methods using detergent solution, scrubbing, and wipe downs. At least two efforts by hand cleaning will be attempted. If visual inspection after decontamination is unsuccessful, the contaminated item(s) will be removed and disposed of as dangerous waste.

The external entrance side of the portable office trailers, stairs, and railings will not be decontaminated unless the visual inspection indicates that these surfaces are contaminated. If required, the surfaces will be pressure washed with detergent solution and pressure rinsed with hot tap water ($\geq$ 140°F).

The exterior of the Building 944 Break Room, not including the north and west exterior walls as shown in Figure 7, will be decontaminated with the same process as that prescribed for the decontamination of lower wall portions in the building components section.

The south exterior wall of Building 982 will not be decontaminated because this surface has not been in contact with the wastes stored within this facility (Figure 7).

Figure 7 details the areas that will be decontaminated as part of the aboveground clean closure process.

(G) Decontamination Solution

The detergent solution recommended for the decontamination process will be trisodium phosphate (TSP). This is a standard industrial washing solution and is commonly used in industrial cleaning applications. The compound is typically mixed at a ratio of 1 pound per 10 gallons of water. The solution can be sprayed at room temperature with a pressure washer or high temperatures with a steam cleaner.

Substitute detergent solutions may be used provided they have the following attributes:

- A chelant to dissolve transition metal compounds including those formed by lead, nickel, copper, and mercury, so that they can be removed from the equipment or structures.
- TSP to prevent precipitation of calcium and magnesium from the alkaline solution, which acts as a buffer in the alkaline pH range.
- Surfactants and organic "coupling" agents to emulsify and stabilize solvents, soil, and other organic materials.

Substituted detergent solutions will be mixed according to manufacturer's instructions.

12. Inspections

Closure activities will be observed and reviewed by a Washington-registered PE to assess whether they have been conducted in accordance with this Closure Plan. Ecology will be invited to the post-decontamination inspection, but inability to attend will not be reason to delay the inspection.

The registered PE will make the determination when an area/equipment is visually clean. An area will be classified as clean by visual inspection. No wipe samples or other sampling techniques will be performed to make the determination that an area has been cleaned.

13. Schedule of Closure

It is expected that the Building 944/982 TSDF will begin closure immediately following Closure Plan approval by Ecology. An extended timeframe is requested due to the Navy's contracting requirements and the lengthy time required for bidding and contracting a project of this nature. The bidding and contracting takes an average of 2 months after Closure Plan requirements are approved. Following the contract award, there is a 30-day period for contractor plan development, approval, and mobilization prior to actual start of closure activities. Closure activities will be performed as expeditiously as possible. The schedule for the closure of the Building 944/982 TSDF is as follows:

MILESTONE	DAY COMPLETED
Closure Plan Approval	Day 0
Bid Solicitation and Contract Award	Day 60
Start Closure Activities – Area A	Day 90
Start Closure Activities – Area B	Day 150
Closure Complete	Day 210
Contract/Closure Documentation Review	Day 240
Send Final Closure Certification to Ecology	Day 270

14. Certification of Closure

Closure and decontamination activities will be monitored by the BNC and by a Washington-registered PE. In accordance with 40 CFR 265.115, the BNC will submit a certification of closure to Ecology, signed by both the BNC and the registered PE, within 60 days of completion of final closure. The certification will state that the Building 944/982 TSDF was closed in accordance with the requirements of the approved Closure Plan.

15. Post-Closure

The Building 944/982 TSDF was managed as a container storage area while arrangements were made for the shipment of dangerous wastes to other permitted TSDFs or to the on-site IWPF. At the completion of closure activities, the facility will be operated as a dangerous waste accumulation area according to the requirements of WAC 173-303-200. As stated in Section 8, the facility's subsurface cleanup is addressed by the ROD agreement among EPA, Ecology, and the Navy, which details a Selected Remedy for OU B Terrestrial in accordance with CERCLA (Navy 2004). Having met the requirements for aboveground clean closure, continued use of the facility, and below ground cleanup as addressed in the ROD, post-closure plans for the Building 944/982 TSDF will not be necessary.

16. Closure Cost Estimates

Under 40 CFR Part 265.140(c) (as invoked and modified by WAC 173-303-400(3)(a) for interim status facilities), the financial assurance, insurance policy requirements, and closure cost estimates are not applicable to federal facilities.

17. References

Hart Crowser. 2000. Soil Characterization, Building 874 Tanks and Buildings 944/982/899, OU B Site 10 West, Naval Station Bremerton, Bremerton, Washington. November 15, 2000.

Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS & IMF). 2005. Memorandum 5090 ser 106.33/01922. May 3, 2005.

URS Consultants (URS). 2002. Final Remedial Investigation Report, Operable Unit B, Bremerton Naval Complex, Bremerton, Washington. March 12, 2002.

U.S. Navy (Navy). 2004. Final Record of Decision, OU B Terrestrial, Bremerton Naval Complex. March 8, 2004.

Attachment A

Sampling and Analysis for Clean Closure of the Building 944/982 Treatment, Storage, and Disposal Facility

a. Objectives

Sampling will be conducted to characterize the soil at the Building 944/982 Treatment, Storage, and Disposal Facility (TSDF). Analytical results of the soil sampling will be used as a reference for any future work involving Operable Unit (OU) B Terrestrial, Site 10 West. Based on previous studies and projects completed in the area, contaminants are present in the soil and can be found throughout the areas of OUB Terrestrial, Site 10 West. The detection of contaminants will not require additional sampling to define the boundaries of the contaminant plume.

Additional sampling will be performed for purposes of waste designation. This activity includes sampling the decontamination water (which will be generated during decontamination activities), sampling the insulation on the walls in the polychlorinated biphenyl (PCB) Storage Area (see Figure A-1), and taking samples of debris removed from the trenches/sumps prior to start of decontamination activities and after completion of water washing.

b. Responsibilities

The overall administration of this sampling plan will be the responsibility of Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS & IMF). Actual performance of the sampling will be done by a qualified private contractor. Samplers will be experienced in U.S. Environmental Protection Agency (EPA) methods and protocols for Resource Conservation And Recovery Act (RCRA) sampling. Documentation of sampling experience will be provided by the contractor. All sample analysis will be performed by a laboratory accredited in accordance with Washington Administrative Code (WAC) 173-50.

c. Soil Sampling Locations

The soil sampling locations are shown on Figure A-1. Figure A-1 will be used by project personnel during the course of the sampling activities. Sampling locations may be relocated, according to requirements of section f of this attachment, due to obstructions during sampling operations.

d. Soil Sample Types and Amounts

Discrete soil samples will be obtained by first coring through the asphalt/concrete to procure a hole large enough to accommodate the sampling equipment. Sampling equipment will be of the type capable of obtaining a continuous 4-foot sample in one attempt (e.g., Geoprobe or Strata-Probe). From this core, three grab samples will be taken at depth equivalents of one each between zero and 1 foot, between 1 foot and 2½ feet, and between 2½ feet and 4 feet. Each sample will be collected for total metals analysis (eight RCRA) and volatile organic compound (VOC) analysis as shown in Table A-1. The samples will not be composited.

e. Sampling Procedure:

(1) Sample locations: The southwest corner post of the chain link fence around the perimeter of the TSDF will be marked as the starting point on which the grid pattern, as depicted in Figure A-1, will be based. The corner point will be documented in the field logbook. The grid pattern will be laid out using string, chalk, or other similar means. Grid squares will be 10 feet by 10 feet in size. Once the grid pattern has been laid out, sample locations as shown in Table A-2 will be marked within the grid.

(2) Sample labeling and chain-of-custody: Samples will be placed in sealed containers and labeled with an identification label and security seal. Chain-of-custody documentation will be completed for each sample. In addition, all sampling data (date, time, location, weather conditions, soil characteristics, etc.) taken will be logged into the field logbook.

(3) Installation of sampling equipment: Samples will be taken using a coring/boring tool (e.g., Strata-Probe or Geoprobe). The coring/boring tool may be hand or power operated and will collect a minimum 1½-inch-diameter core while maintaining integrity of depth information. This tool will be able to collect a 4-foot core in a single bore. Installation and operation of the tool will be according to manufacturer's specifications.

(4) Procedures for sample collection and handling: Standard EPA methods and protocols will be used. A soil core will be collected at each focused point specified in Figure A-1. Conduct sampling as follows:

- Using the coring/boring tool, bore into the soil to a depth of approximately 4 feet.
- Remove the coring/boring tool.
- Wear a new pair of disposable latex gloves and carefully remove the soil core on a clean, new, or decontaminated poly sheet while maintaining the depth configuration of the core. Sample aliquots for volatiles will be collected first. Collection and handling for volatiles will be in accordance with EPA SW-846 Method 5035A and Washington State Department of Ecology (Ecology)

Implementation Memorandum #5. Samples will be collected using 5-gram EnCore® samplers following the manufacturer's instructions. A minimum of four 5-gram EnCore® samplers will be filled for each sample location depth. A sample aliquot for metals will be collected next as follows.

- Using a clean sampling device (e.g., scoop or stainless-steel spoon), fill a 2- or 4-ounce plastic or glass jar for metals analysis. Total solid analysis will also be performed using this container.
- Place samples in a cooler with ice packs immediately after sampling.
- Clean scoop or spoon (if used) and don a new pair of disposable latex gloves prior to sampling each depth point.

(5) Personnel and equipment decontamination: Prior to mobilizing the sampling equipment to the site, the equipment will be certified clean (if new), or thoroughly cleaned. Equipment that contacts the sample and will be reused, will be decontaminated after each use. To decontaminate equipment:

- Submerse or rinse items with an Alconox detergent solution.
- Use a wire or bristle brush to thoroughly clean all surfaces.
- Rinse with tap water followed by de-ionized water.
- Catch rinse water in a collection bucket.
- Visually inspect the tool. If any residue remains on the tool, repeat the above procedure until no residue is observed.

Decontamination of personnel is not necessary due to the use of disposable gloves.

(6) Management of sampling waste: All solid waste generated by sampling (e.g., gloves and cloths) that show visual indications of potential contamination will be turned over to Shop 90HM and managed in accordance with current BNC instructions. Typically, this waste will be sent to an off-site TSDF (if dangerous), a sanitary landfill, or recycled.

(7) Quality assurance and quality control (QA/QC) samples: The following QA/QC samples will be used or taken: field blanks, rinsate blanks, trip blanks, and field duplicates. All QA/QC samples will be marked with the appropriate description, location, and recorded in the field logbook. One field blank and one rinsate blank will be taken following the fourth sampling location and will be analyzed for metals. (Analysis of volatiles for the field and rinsate blanks is not necessary because EnCore® samplers will be used.) The field blank will be taken by filling one 500-ml plastic or glass bottle with de-ionized water within the facility area. The rinsate blank will be taken by pouring de-ionized water over the sampling equipment (e.g., scoop or spoon) and collecting it in one 500-ml plastic or glass bottle. A trip blank for volatiles analysis will be included inside each cooler containing samples for volatiles analysis. A field duplicate will be taken during the sampling of the sixth location. The field duplicates will be prepared by collecting an additional set of samples from the zero to 1 foot depth. It will be

analyzed for metals and volatiles. The QA/QC samples will be marked with a unique sample identification as appropriate.

(8) Splitting Samples: If requested by Ecology in advance, any sample can be split for analysis by Ecology.

f. Sampling Relocation Criteria

(1) Should the coring/boring tool run into an obstruction such that a continuous 1- to 4-foot depth sample core cannot be obtained at the designated location, then the sample location will be modified.

(2) Relocation of the sample site will be in the following pattern until a satisfactory sample core is obtained or the alternate sites are all unobtainable:

- Move the sample location approximately 1 foot south of the intended grid location.
- Re-core the asphalt or concrete to accommodate the sampling equipment.
- Obtain a continuous 1- to 4-foot sample core in a single bore. If an obstruction is still encountered, move the sample site approximately 1 foot east of the intended grid location (then 1 foot west, and finally 1 foot north).

(3) If a continuous 1- to 4-foot sample core cannot be obtained after five attempts due to obstructions, then the original sample location will be abandoned and will be noted in the field logbook as "unobtainable due to a sub-surface obstruction."

(4) Abandoned sample locations will be replaced with a new location assigned by Code 106 of the BNC. The new sample location will be noted in the field logbook.

g. Sampling and Analysis of Decontamination Water

It is estimated that 7,500 gallons of decontamination (decon) water will be generated, requiring collection and analysis of two water samples. The decon water samples will be collected as grab samples and will be analyzed at an off-site laboratory for RCRA metals, VOCs, and semivolatiles (SVOCs). The target compound lists for metals, VOCs, and SVOCs will be those with dangerous waste criteria (i.e., the Toxicity Characteristic Leaching Procedure [TCLP] list). The decon water will be containerized, treated as Waste Awaiting Designation (WAD), and will be characterized by Shop 90HM based on the analytical results.

h. Sampling and Analysis of Insulation on the Walls in the PCB Storage Area

Approximately one roll-off container of insulation material from the walls in the PCB Storage Area (see Figure A-1) will be generated during decontamination efforts. A grab sample of insulation will be collected using disposable latex gloves and will be analyzed at an off-site laboratory for PCBs and RCRA metals for designation purposes.

i. Sampling and Analysis of Debris

Approximately one 55-gallon drum containing debris removed from the trenches/sumps prior to water washes will be accumulated during decontamination activities. One composite sample will be collected and analyzed by an off-site laboratory for RCRA metals, VOCs, and SVOCs. The target compound lists for metals, VOCs, and SVOCs will be those with dangerous waste criteria (i.e., the TCLP list).

j. Analysis of Samples and Reporting of Results

(1) Selection of the laboratory: All samples will be analyzed by a contract laboratory, which is accredited by the State of Washington under WAC 173-50 for the analytical methods needed for this project.

(2) Identification of sampling and analysis parameters: Analytical parameters for each sample type are discussed in the applicable sections (i.e., Sections d, g, h, and i).

(3) Analytical techniques and procedures: EPA SW-846 methods shall be used. Specifically, the 6000/7000 Series methods will be used for analysis of metals; Method 8260B will be used for analysis of VOCs; Method 8270C will be used for analysis of SVOCs; and Method 8082 will be used for analysis of PCBs. If TCLP is required, Method 1311 will be employed prior to sample preparation and analysis. Soil samples for VOCs will be collected and handled in accordance with Method 5035A prior to analysis by 8260B. Equivalent SW-846 methods may be substituted in accordance with EPA protocols with approval of PSNS & IMF.

(4) Detection or quantitation limits: The practical quantitation limits (PQLs) will be used by the laboratory consistent with the selected analytical method.

(5) Laboratory QA/QC: All laboratory QA/QC will be in accordance with the Department of Defense Quality Systems Manual for Environmental Laboratories, Final Version 3.

(6) Data reporting: The sampling contractor will provide copies of all reports to Code 106. A copy of the field logbook will be provided.

Table A-1. List of Analytes

Volatile Organic Compounds	CAS Number
Acetone	67-64-1
Benzene	71-43-2
Bromobenzene	108-86-1
Bromochloromethane	74-97-5
Bromodichloromethane	75-27-4
Bromoform	75-25-2
Bromomethane (Methyl bromide)	74-83-9
2-Butanone (MEK)	78-93-3
n-Butylbenzene	104-51-8
sec-Butylbenzene	135-98-9
tert-Butylbenzene	98-06-6
Carbon Disulfide	75-15-0
Carbon Tetrachloride	56-23-5
Chlorobenzene	108-90-7
Chlorodibromomethane	124-48-1
Chloroethane	75-00-3
Chloroform	67-66-3
Chloromethane	74-87-3
2-Chlorotoluene	95-49-8
4-Chlorotoluene	106-43-4
1,2-Dibromo-3-chloropropane	96-12-8
1,2-Dibromoethane (Ethylene dibromide)	106-93-4
Dibromomethane	74-95-3
1,2-Dichlorobenzene	95-50-1
1,3-Dichlorobenzene	541-73-1
1,4-Dichlorobenzene	106-46-7
Dichlorodifluoromethane	75-71-8
1,1-Dichloroethane	75-34-3
1,2-Dichloroethane	107-06-2
1,1-Dichloroethene	75-35-4
Cis-1,2-Dichloroethene	156-59-2
1,1-Dichloropropene	563-58-6
cis-1,3-Dichloropropene	10061-01-5
Trans-1,3-Dichloropropene	10061-02-6
Ethylbenzene	100-41-4
2-Hexanone	591-78-6
Hexachlorobutadiene	87-68-3
Isopropylbenzene	98-82-8
p-Isopropyltoluene	99-87-6
Methylene Chloride (Dichloromethane)	75-09-2
4-Methyl-2-pentanone (MIBK)	108-10-1
Methyl Tert-butyl Ether (MTBE)	1634-04-4
Naphthalene	91-20-3
n-Propylbenzene	106-65-1
Styrene	100-42-5
1,1,1,2-Tetrachloroethane	630-20-6
1,1,2,2-Tetrachloroethane	79-34-5
Tetrachloroethene	127-18-4

Toluene	
1,2,3-Trichlorobenzene	108-88-3
1,2,4-Trichlorobenzene	87-61-6
1,1,1-Trichloroethane	120-82-1
1,1,2-Trichloroethane	71-55-6
Trichloroethene	79-00-5
Trichlorofluoromethane	79-01-6
1,2,3-Trichloropropane	75-69-4
1,2,4-Trimethylbenzene	96-18-4
1,3,5-Trimethylbenzene	95-63-6
Vinyl Chloride	108-67-8
0-Xylene	75-01-4
m,p-Xylene	95-47-6
Xylenes (Total)	108-38-3 / 106-42-3
	1330-20-7
trans-1,2-Dichloroethene	156-60-5
1,2-Dichloropropane	78-87-8
1,3-Dichloropropane	142-28-9
2,2-Dichloropropane	594-20-7

Metals	**CAS Number**
Arsenic	7440-38-2
Barium	7440-39-3
Cadmium	7440-43-9
Chromium (total)	7440-47-3
Lead	7439-92-1
Mercury	7439-97-6
Selenium	7782-49-2
Silver	7440-22-4

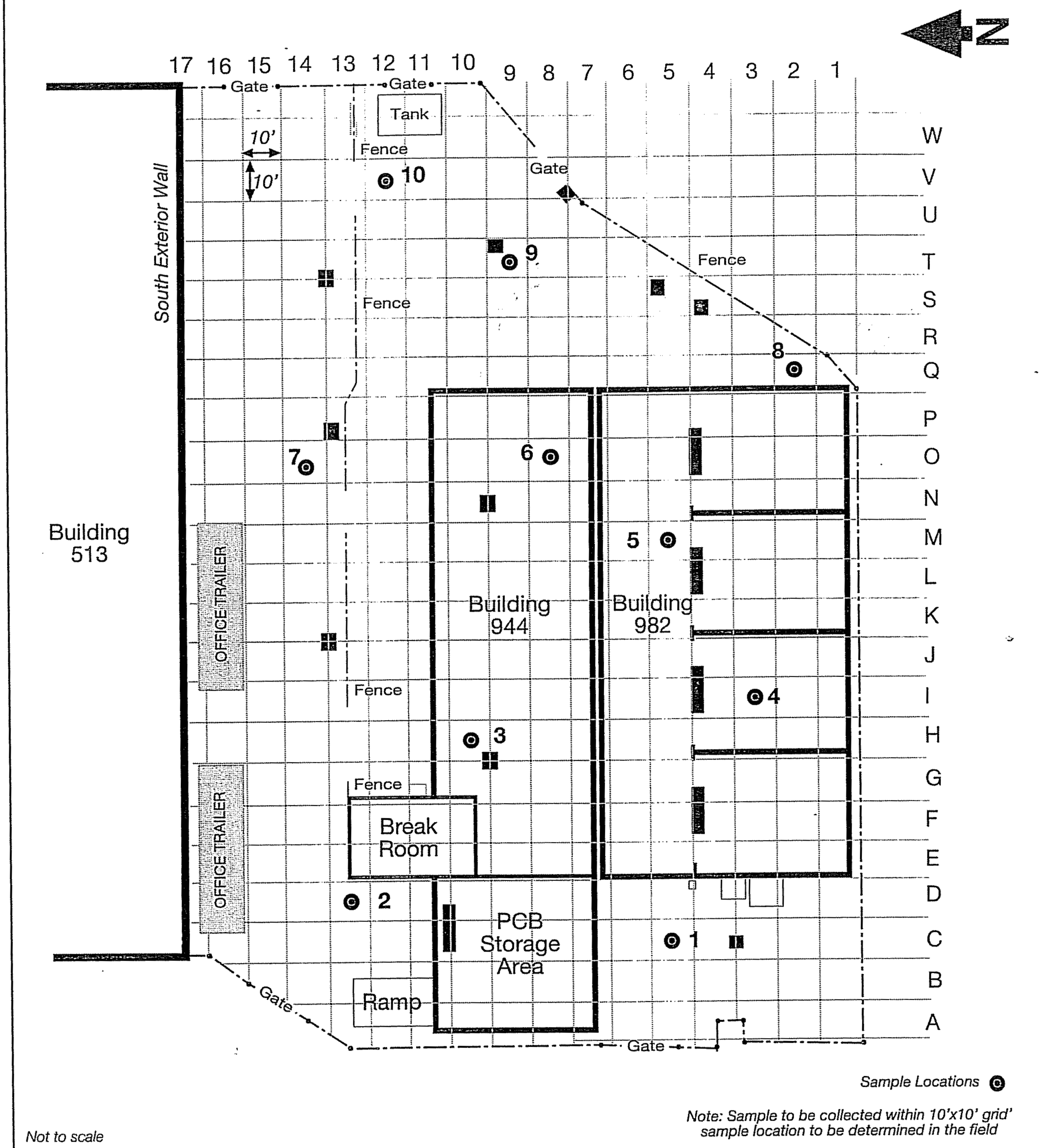


Figure A-1
Sample Locations

Table A-2

Sample No.	Grid Location
1	C-5
2	D-13
3	H-10
4	I-3
5	M-5
6	O-8
7	O-14
8	Q-2
9	T-9
10	V-12